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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/821,454

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Changzhou Wang

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EXAMINER

HIRL, JOSEPH P

ART UNIT

PAPER NUMBER

2129

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/821,454	<b>Applicant(s)</b> WANG, CHANGZHOU	
	<b>Examiner</b> Joseph P. Hirl	<b>Art Unit</b> 2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 33-39 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 40-47 and 53-56 is/are allowed.
- 6) ☐ Claim(s) 1-25 and 48-52 is/are rejected.
- 7) ☐ Claim(s) 26-32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/8/4</u> .   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. Claims 1-56 are pending in this application.

***Claims Allowed***

2. Claims 40-47, 53-55 and 56 are allowed.

***Claims Objected***

3. Claims 26-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. Claims are numbered from 1 to 56 with the claim sequence 34-39 missing. Since the first office action has been taken without such claims being identified, the response to this office action should cancel the sequence 34-39.

***Information Disclosure Statement***

5. The information disclosure statement filed July 8, 2004 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because NPL documents have hyper link references. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Examiner's Note (EN): cardinality is interpreted to mean "count of" and "disjoint occurrences of the pattern" is interpreted to a section of a sequence representing a pattern. ¶ 11. applies.

7. Claims 1-56 are rejected under 35 U.S.C. 102(b) as being anticipated by Mannila et al. (University of Helsinki, Discovery of Frequent Episodes in Event Sequences, C-1997-15, referred to as **Mannila**).

**Claim 1**

Mannila anticipates determining a maximum cardinality of disjoint occurrences of the pattern in the one or more sequences (**Mannila**, p261:22-31).

**Claim 2**

Mannila anticipates the maximum cardinality comprises counting a quantity of disjoint occurrence sets in the one or more sequences (**Mannila**, p261:22-31).

**Claim 3**

Mannila anticipates determining occurrences of the pattern in the one or more sequences; and identifying a disjoint occurrence from the occurrences (**Mannila**, p261:22-31).

**Claim 4**

Mannila anticipates determining the maximum cardinality as a function of counting a quantity of identified disjoint occurrences (**Mannila**, p261:22-31).

**Claims 5, 16**

Mannila anticipates identifying occurrences includes matching event instances to a group within the pattern, and matching matched groups to the pattern (**Mannila**, p261:22-31).

**Claim 6**

Mannila anticipates pattern includes determining that the matched event instances are within a group window size constraint of the group (**Mannila**, p261:22-31).

**Claim 7**

Mannila anticipates applying an upper time gap constraint of the pattern to the two or more matched groups (**Mannila**, p261:11-31; EN: a time gap constraint is  $t_s \leq t_e$  ).

**Claim 8**

Mannila anticipates applying a lower time gap constraint of the pattern to the two or more matched groups (**Mannila**, p261:11-31).

**Claim 9**

Mannila anticipates removing an event instance that is included in the identified disjoint occurrence from the sequence of time-stamped event instances (**Mannila**, p261:26).

**Claim 10**

Mannila anticipates identify further disjoint occurrences wherein the removed event instances are not included in the identification of more than one disjoint occurrence of the pattern (**Mannila**, p261:16-31).

**Claim 11**

Mannila anticipates flagging an event instance that is included in the identified disjoint occurrence from the sequence of time- stamped event instances (**Mannila**, p261:22-31).

**Claim 12**

Mannila anticipates repeating the method to identify further disjoint occurrences wherein the flagged event instances are not included in the identification of more than one disjoint occurrence of the pattern (**Mannila**, p261:22-31).

**Claim 13**

Mannila anticipates a first occurrence is disjoint from a second occurrence when an intersection of event instances between the first occurrence and the second distinct occurrence is null (**Mannila**, p261:Fig. 2; EN: window is 5 and event A is part of the first set and A is null in the second set ).

**Claim 14**

Mannila anticipates a first occurrence is disjoint to a second occurrence when an event instance occurs in only one of the first occurrence and the second occurrence (**Mannila**, p261:Fig. 2; EN: window is 2 such would be event C at 42 and 50).

**Claim 15**

Mannila anticipates wherein the event instances within the sequence are categorized into a predetermined set of categories (**Mannila**, p260:5-6; EN: the “predetermined set of categories” is the “class of episodes”).

**Claim 17**

Mannila anticipates matching a group of event categories to the sequence to identify an occurrence of the group within the sequence (**Mannila**, p261:22-31); identifying a fully matched group wherein the event instances comprising the matched group are within a temporal window width defined by the group (**Mannila**, p261:22-31);

identifying an occurrence of the pattern by determining that a first matched group is within a temporal window of a second matched group, said temporal window defining the temporal relationship between the first group and the second group (**Mannila**, p261:22-31); identifying event instances composing each identified pattern occurrence (**Mannila**, p261:33-34) ; identifying disjoint occurrences from the identified pattern occurrences, wherein a particular event instance is an event instance in only one disjoint occurrence of the pattern (**Mannila**, p261:1-9); and summing a count of all identified disjoint occurrences, said sum being the maximum cardinality of the pattern in the sequence (**Mannila**, p261:22-31).

#### **Claim 18**

Mannila anticipates a parameter defining the pattern is at least one from the group consisting of an event instance, a category, a group, a minimum time gap, a maximum time gap, and a window size (**Mannila**, p261:11-31).

#### **Claim 19**

Mannila anticipates the sequence comprises a temporal overlap of at least one occurrence of the pattern with another occurrence of the pattern (**Mannila**, p261:22-31; EN: in Fig. 2, such is BC between 35 and 40).

#### **Claim 20**

Mannila anticipates the time-stamped event instances are one or more events from the group consisting of an operation of a work device, a purchase, a bid, an action, a message, an event, and a score (**Mannila**, p261:22-31).

#### **Claim 21**



Mannila anticipates a work device is an airplane and the time-stamped event instances are events associated with operations of the airplane (**Mannila**, p261:22-31; EN: the mere statement to associate events with operations of an airplane does not establish functional distinctness to the claim).

#### **Claim 22**

Mannila anticipates the disjoint occurrence is indicative of required maintenance procedure associated with the work device (**Mannila**, p261:22-31; EN: the mere statement to associate events with operations of an airplane does not establish functional distinctness to the claim; the evaluation of a disjoint occurrence is not characterized in evaluation by the subject work device).

#### **Claim 23**

Mannila anticipates wherein the two or more sequences are indicative of two or more airplanes comprising a fleet of airplanes and the time-stamped event instances are events associated with operations of the two or more airplanes within the fleet of airplanes (**Mannila**, p261:22-31; EN: the mere statement to associate events with airplanes does not establish functional distinctness to the claim; event A can represent an event with one airplane and event B can represent an event with another airplane where the related sequences have been concatenated to form Fig. 2)

#### **Claim 24**

Mannila anticipates an event instance includes one or more from the group consisting of a purchase, a sale, a transaction, a score, an alarm, a failure, an action, a bid, an omission, a request, an order, a message, an attempt, an interruption, a

cancellation, and a change of a parameter (**Mannila**, p259:1-18; p261:22-31).

**Claims 25, 33, 51, 52**

Mannila anticipates counting instances of the first event in the sequence (**Mannila**, p261:22-31); counting instances of the second event in the sequence (**Mannila**, p261:22-31); and determining the expected quantity of distinct occurrences of the pattern as a function of the quantity of first event instances, the quantity of second event instances, the maximum time length of the sequence, the minimum time gap, and the maximum time gap (**Mannila**, p263:18-26; EN: expected quantity is synonymous with conditional probability of the subject event and from the analysis of frequent episodes, appropriate rules will be obtained; a complex pattern is represented by Fig. 2).

**Claim 48**

Mannila anticipates means for storing the sequence (**Mannila**, abstract; EN: collection to accumulate or collect, one has to store); means for defining the pattern (**Mannila**, abstract; EN: episode is a collection of events or pattern); means for determining a maximum cardinality of disjoint occurrences of the pattern in the sequence (**Mannila**, abstract; EN: an alarm is a maximum cardinality).

**Claim 49**

Mannila anticipates wherein the time-stamped event instances include events associated with an operation of an aircraft (**Mannila**, abstract; EN: the mere statement to associate events with airplanes does not establish functional distinctness to the

claim).

### **Claim 50**

Mannila anticipates computer readable medium including computer executable instructions for determining distinct occurrences of a pattern in a sequence of time-stamped event instances, the computer instructions comprising means for determining a maximum cardinality of disjoint occurrences of the pattern in the sequence (**Mannila**, abstract; such would be a system as defined in the Microsoft Computer Dictionary, Fifth Edition).

### ***Examination Considerations***

8. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

9. Examiner's Notes are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

10. Unless otherwise annotated, Examiner's statements are to be interpreted in reference to that of one of ordinary skill in the art. Statements made in reference to the condition of the disclosure constitute, on the face of it, the basis and such would be obvious to one of ordinary skill in the art, establishing thereby an inherent prima facie statement.

11. Examiner's Opinion: ¶¶ 8.-10.. apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

### ***Conclusion***

12. The prior art of record and not relied upon is considered pertinent to applicant's disclosure.

- Bunda et al., USPN 6,105,032
- Ding et al., USPGPUBN 2004/0260517

- Mannila et al., USPN 6,526,405
- Chakrabarti et al., USPN 6,189,005
- Roddick et al., IEEE 1041-4347/02, A Survey of Temporal Knowledge  
Discovery Paradigms and Methods

13. Claims 1-25, 48-52 are rejected. Claims 33-39 are missing. Claims 26-32 are objected to. Claims 40-47 and 53-56 are allowed.

### ***Correspondence Information***

14. Any inquiry concerning this information or related to the subject disclosure should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 5:30 a.m. to 4:00 p.m.

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the applicant. Without a written authorization by applicant recorded in the applicant's file, the USPTO will not respond via e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is an example authorization which may be used by the applicant:

Notwithstanding the lack of security with Internet Communications, I hereby authorize the USPTO to communicate with me concerning any subject matter related to the instant application by e-mail. I understand that a copy of such communications related to formal submissions will be made of record in the applications file.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,  
Washington, D. C. 20231;

Hand delivered to:

Receptionist,  
Customer Service Window,  
Randolph Building,  
401 Dulany Street,  
Alexandria, Virginia 22313,  
(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

/Joseph P. Hirl/  
Primary Examiner, Art Unit 2129  
February 29, 2008